

1 **APPARATUS METHOD AND SYSTEM FOR ASYNCHRONOUS**  
2 **REPLICATION OF A HIERARCHICALLY-INDEXED DATA STORE**

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4 **ABSTRACT OF THE INVENTION**

5 Changes such as write operations on a replication source comprising a hierarchically-  
6 indexed file system and associated data store are tracked and aggregated over a point-in-time  
7 image replication interval and communicated to a replication target. The replication target  
8 receives the changes, conducts operations to make the changes on a target volume or portion  
9 thereof, and conducts a point-in-time image replication operation to synchronize the  
10 replication target with the replication source. In the present invention the advantages of  
11 replication techniques developed for log-structured file systems are provided to systems with  
12 conventional hierarchical file systems. The invention also facilitates maintaining point-in-  
13 time retrievable images of a volume or portion thereof on a target volume while reducing the  
14 bandwidth and processing burden associated with replication.  
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